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Medicinal properties of aloe barbadansis: A review article

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Abstract
Aloe vera is an perennial plant belonging to the genus Aloe which grows in the tropical, semi-tropical, and arid climates of earth. many research have done to find out the therapeutic properties of *Aloe vera*. Its ability to cure inflammation is considered to be the key in in most of its activities. The most recent research mainly focus on its immunomodulatory properties of the polysaccharides present in its gel. The glycoprotein present in its gel has also been reported to have various therapeutic activities. Apart from these the result of various studies also reveal of its allergic capability in various patient. Many other studies conducted on the plant sample also show that it has many other activities like Antibiotic, Anti-cancer and Anti diabetic activities. It is therefore expected that we might see a very wide use of *Aloe vera* in the pharmaceuticals. Many manufacturers aim to isolate the exact chemicals and market the product in dose-able form. This review article focuses on the therapeutic activities of *Aloe vera.*

Keywords: Medicinal, Perennial, therapeutic, capability

1. Introduction
Scientific name of Aloe is Aloe barbadansis miller belonging to Family Asphodelaceae (liliaceae). Aloe vera is widely used in treatment of many disease and also used in cosmetic prepration. Aloe vera plant has health benefits also and astounding that hardly any part of human body remain un influenced by its healing touch. It is being used as a medical value for thousands of year. Its application has been recorded in ancient culture of India, Rome, China and Egypt. Some of its common names are Aloe indica royale, Aloe barbadansis mill, Aloe officinalis forsk and etc. It grows wild on the island Cyprus, Sicily, Cape veroe and has spread over arids trats of India. In India the average growth of Aloe vera is about 12 tonnes. Out of 275 species 42 belong to Madagascar region (Africa) [1, 2].

Fig 1: Aloe Barabaenis

2. Biological Source
Dried and fresh juice of the leves of plants of Aloe barbadansis belonging to family Liliacae. These are the solid residue obtained by the evaporating the liquid which drain from the transversely cut leaves of various Aloe species. The juice usually concentrated by boiling and solidify on cooling.

3. Geographical Source
- Aloe vera are mainly found in East and South Africa, West Indies and into topical nations.
- Aloe barbadansis (Aloe vera) will even thrive in the nations verging on the Mediterranena.
- In India, it is found in Rajasthan, Andhra Pradesh, Gujarat, Maharashtra, Uttra Khand, Himachal Pradesh, and Tamil Nadu [7].
- It is economically developed in India, South Africa, the United of America, China and Venezula.
- It is a typical family solution for assortment of uses.

4. Morphology
Taste: Bitter Odour: None
Size & Shape: Plant growing to 60-100cm of hight
Colour: Leaves are green to grey- green flower
Flower: Yellow tubular in 25-35cm in a slender loose stamen
Root: Root fibers are 30-40 cm in length

Fig 2: Leaves of Aloe Barbadanis

5. Microscopic Identification

1. Leaves: These are thick leaves grow in rosette shaped. It contains large quantity of pulp in its parenchyma. it grows 30 to 50 cm long and has 10 cm width at the base.
2. The leaves with serrated edges that aries from a central base. It has spines of various rigidity along the edge of succulent Leaves [5].
3. Flowers: The production of aloe vera is done in summer at a height of 90cm, Its flower begains pendulous, yellow tubular corolla 2 to 3cm long. The colour range come from white to yellow to orange to red. These are held on single or branched stalks.
   And there is no calyx and seeds are in dry capsule.
4. Roots: The roots of aloe tends to grow wide but not so deep into the soil. These are grow in little rainfall. Its important feature is it forms Arbuscular mycorrhiza fungus that goes inside the roots to allow the plant quite good entrance to mineral nutrients in the soil.
5. Fruit: It produce capsules, dry fruits that split open at maturity to relese the Soil. The fruits are triangular capsule containing numerous seeds [4].

5. Chemical Constituents

Aloe contain more than 200 different types of molecule the 10 main chemical constituents are: Amino acid anthra quinines, enzymes, vitamins, minerals, sugar, harmones, salicylic acid, saponins and steroids [9, 11]

Table 1

S. No.	Constituents	Number and Identification	Properties and Activity
1.	Amino Acids	Provides 20 of the 22 required Amino Acid and 7 of 8 essential ones.	Basic building blocks of proteins in the body and muscle tissue.
2.	Anthraquinone	Provides aloe emodin, Aloetic Acid, Alovin, Anthracine	Analgesic, Antibacteria
3.	Enzymes	Anthranol, Barbaloin, Chrysophanic Acid, Smoidin, Entherel Oil, Ester of Cinnamonic Acid, Isobarbaloin, Resistannol.	Antifungal and Antiviral activity but toxic at high concentration.
4.	Hormones	Auxins and Gibberellins	Wound healing and anti inflammatory,
5.	Minerals	Calcium, Chromium, Copper, Iron, Mangnese, Potassium, Sodium and Zinc.	Essential for good health.
6.	Salicylic Acid	Aspirin like compound	Analgesic
7.	Saponins	Glycosides	Cleaning and Antiseptic
8.	Steroids	Cholesterol, Campesterl, Lupeol, Sistosterol.	Antiinflammatory Agent, Lupeol has Antiseptic and Analgesic properties.
9.	Sugars	Monosaccharides: Glucose and Fructose Polysaccharides: Glucomannans/Polymannose	Antiviral, Immune modulating activity of acemannan.

6. Medicinal Properties

A. vera is anthelmintic, aperients, carminative, diuretic, stomachic and emmenagogue. Juice is used in skin care medicine, dyspepsia, burns. juice of this plant, is used for the treatment of purgative, anthelmintic & emmenagogue. It also has anti tumor, anti-ulcer effect. The gel is used in both tropical internally to treat dibities immune deficiency syndroms and contibation etc.

7. Cosmetic and Skin Production

Aloin and its gel are used as skin for pimples. Aloe vera is also used for soothing as well as keeping the skin moist to help avoid flaky scalp and skin in harsh and dry weather. It makes an excellent skin smoothing moisturizer, sun's cream. The plant is widely used in skin care and gel has been used to have a protective affect to reduce radiation.

8. Antiseptic

The antiseptic property of Aloe vera is due to presence of six antiseptic agents namely lupeol, phenols, salicylic acid, urea nitrogen and cinnamonic acid, and sulphur. These compounds have inhibitory action on fungi, bacteria and viruses. Though most of these uses are interesting con-trolled trials are essential to determine its effect in all diseases.

9. Anti-Cancer Activities

Polysaccharides and Glycoproteins present in Aloe vera is potent chemo-preventive agent that is useful against various types of cancers. These agents increase the immune system to fight against cancer. Barbaloin, aloe- emodin and aloesin extracted from Aloe vera have shown cytotoxicity against acute myeloid leukemia and acute lymphocytes leukemia cancerous cells. Administration of these active compounds have been reported to significantly extend the life span of tumor transplanted animals [20].

10. Anti Diabites

Aloe vera contains polysaccharides which show hypoglycemic properties and increase the insulin level Extracts. sugar in diabetes. Plants also provide new oral compound for anti-diabetic, which can counter the high cost and poor availability of the current medicines for many rural area in developing countries [17].

11. Wound Healing

Wound healing is a dynamic process, occurring in 3 phases.1st phase is inflammation, hyperaemia and leukocyte infiltration. 2nd phase consists of removal of dead tissue.3rd phase of proliferation consisting of epithelial regeneration and formation of fibrous tissue Aloe vera is used for the healing of first to second degree burns Mannose-6-phosphate of aloe has the property of wound healing [15].

12. Anti-Inflammatory Action

Aloe gel has been revealed by a number of in vitro and in

vivo studies for anti-inflammatory activity through bradykinase activity. C-glucosyl chromone is isolated from the gel of aloe as a noval inflammatory compound. In croton oil-induced oedema in mice, three A.vera gel sterols were able to reduce inflammation by up to 37%. Lupeol, the most active antiinflamatory sterol, reduced inflammation by its dose dependent manner. Other aspirin like component present in aloe [19].

13. Moisturizing and Anti-Aging Agent

The Aloe gel gives cooling effect and also maintain the moisturizing agent. It also has role in gerontology and rejuvenation of aging skin. This property of Aloe vera is be-cause it's biogenic material. Aloe vera is used as skin tonic and skin moisturizer in cosmetic industry.

14. Laxative Effects

Anthraquinones present in latex stimulate mucus secretion, increase intestinal water content and intestinal peristalsis. Primarily aloe vera are the 1, 8-dihydroxyanthracene glycosides, aloin A and B. After oral administration aloin A and B, are it hydrolysed in the colon by intestinal bacteria because of the unabsorption in upper intestine and then reduced to the active metabolites which acts as a stimulant and irritant to the gastrointestinal tract [17].

15. Anti-Bacterial Activity

A. vera gel was bactericidal against pseudomonas aeruginosa and acemannan kept it from holding fast to human lungs epithelial cells in a monolayer society. It took care of Aloe vera gel prepration ruined the improvement of development Candida albicans. The gel contains 99.4%of water, the staying 0.75%is made up of solid with starches constituting for a sweeping part. concentrated concentrates of Aloe vera leaves are used as diuretic and also as a haemorrhoid treatment. Aloe vera gel can fortify the body's resistant framework Glucomannan and acemannan have been exhibited to revive, actiuating macrophages, wound recuperating, bracing safe structure additionally antibacterial, antifungal and antiviral effects. The preliminary phytochemistry revealed close to the terpenoids, flavonoids and tannins. Aloe vera secundiflora could be a rich wellspring of antimicrobial agenstsand its utilization by the neighborhood individuals of need victroria district of Kenyas [14]

16. Conclusion

Aloe vera has a great potential in the pharmaceutical industry as it has a wide range of theaputic effect. It has both pharmaceutical and cosmeticuses. It's activity include woundhealing, antibacterial, and Anti-infalmmatory activities. The main healing activity is due to its anti-inflammatory activity. It is thus concluded from this reviearticle that it has a wide application waiting in the near future.

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